

PATENT  
0020-5146P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Yoshinori SHIMIZU et al. Conf.:  
Appl. No.: NEW(Div. of Appl. No. Group:  
09/458,024)  
Filed: July 1, 2003 Examiner:  
For: LIGHT EMITTING DEVICE WITH BLUE LIGHT  
LED AND PHOSPHOR COMPONENTS

INFORMATION DISCLOSURE STATEMENT  
(SUBMISSION WITH CONTINUATION-IN-PART OR  
RULE 1.53(b) CONTINUATION OR DIVISIONAL APPLICATION)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 1, 2003

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO-1449 form(s), attached hereto.

II. REFERENCES PREVIOUSLY CITED OR SUBMITTED

Pursuant to 37 C.F.R. § 1.98(d), consideration of information listed on the PTO-1449 form(s) is requested since any patents, publications, or other information which are listed on the PTO-1449 form(s) but for which copies are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

<u>U.S. Appl. No(s).</u>	<u>U.S. Filing Date(s)</u>
09/458,024	December 10, 1999
09/300,315	April 28, 1999
08/902,725	July 29, 1997

III. FEES

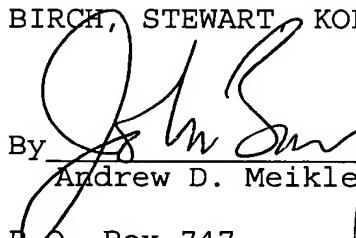
This Information Disclosure Statement is being filed concurrent with the filing of a continuation-in-part, continuation, or divisional patent application; therefore, no fee is required.

If the Examiner has any questions concerning this IDS or requires a copy of any of the references cited but not provided, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule and charge the appropriate fee to Deposit Account No. 02-2448.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By  #32,881  
Andrew D. Meikle, #32,868

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

ADM/<sup>gm</sup>EHC/mua  
0020-5146P

Attachment(s):  PTO-1449(s)

- References
- Foreign Search Report
- Other:

(Rev. 04/29/03)

Form PTO-1449 <b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b> <small>(Use several sheets if necessary)</small>				ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024			
				APPLICANT Yoshinori SHIMIZU et al.				
				FILING DATE July 1, 2003	GROUP			
				<b>U.S. PATENT DOCUMENTS</b>				
EXAMINER INITIAL	DOCUMENT NUMBER	KIND	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE	
	US 3,652,956		1972-03-28	Pinnow et al.				
	US 4,314,910		1982-02-09	Barnes				
	US 5,006,908		1991-04-09	Matsuoka et al.				
	US 5,369,289		1994-11-29	Tamaki et al.				
<b>FOREIGN PATENT DOCUMENTS</b>								
Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	59-30107	U	1984-02-24	JAPAN				X
JP	7-32638	U	1995-06-16	JAPAN				X
JP	01-257993	A	1989-10-16	JAPAN				ABS
JP	01-260707	A	1989-10-18	JAPAN				ABS
JP	02-111922	A	1990-04-24	JAPAN				ABS
JP	05-142424	A	1993-06-11	JAPAN				X
JP	06-160635	A	1994-06-07	JAPAN				X
JP	06-027327	A	1994-02-04	JAPAN				X
JP	06-82633	A	1994-03-25	JAPAN				X
<b>OTHER DOCUMENTS</b> (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)								
"White LED lamp: Efficient light-emitting; Manufacture cost half", Nikkei Sangyo Shimbun, September 13, 1996, Published by Nihon Keizai Shimbunsha.								
Shuji NAKAMURA, "InGaN/AlGaN blue-light-emitting diodes", J. Vac. Sci. Technol. A 13(3), May/Jun 1995, pp.705-710.								
Shuji NAKAMURA et al., "Si-Doped InGaN Films Grown on GaN Films", Jpn. J. Appl. Phys. Vol. 32 (1993), pp. L16-L19, Part 2, No. 1A/B, 15 January 1993.								
Shuji NAKAMURA et al., "P-GaN/N-InGaN/N-GaN Double-Heterostructure Blue-Light-Emitting Diodes", Jpn. J. Appl. Phys. Vol. 32 (1993), pp. L8-L11, Part 2, No. 1A/B, 15, January 1993.								
Shuji NAKAMURA, "Zn-doped InGaN growth and InGaN/AlGaN double-heterostructure blue-light-emitting diodes", Journal of Crystal Growth, 145 (1994), pp. 911-917.								
Shuji NAKAMURA, "High-Power InGaN/AlGaN Double-Heterostructure Blue-Light-Emitting Diodes", IEDM 94 (1994), IEEE, pp. 567-570.								
Kozo OSAMURA et al., "Preparation and optical properties of Ga <sub>1-x</sub> In <sub>x</sub> N thin films", Journal of Applied Physics, Vol. 46, No. 8, August 1975, pp. 3432-3437.								
				DATE CONSIDERED				
EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.								

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b> <small>(Use several sheets if necessary)</small>		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	KIND	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	07-114904	A	1995-05-02	JAPAN			X	
JP	07-235207	A	1995-09-05	JAPAN			X	
JP	53-7153		1978-01-21	JAPAN				X
JP	7-42152	U	1995-07-21	JAPAN			X	
JP	55-4898	A	1980-01-14	JAPAN				X
JP	55-005533	A	1980-01-16	JAPAN			ABS	
JP	60-185457	A	1985-09-20	JAPAN			ABS	
JP	62-20237	A	1987-01-28	JAPAN				X
JP	62-232827	A	1987-10-13	JAPAN				X

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)

Takashi MATSUOKA et al., "Growth and Properties of a Wide-Gap Semiconductor InGaN", Optoelectronics-Devices and Technologies, Vol. 5, No. 1, pp.53-64, June 1990.
T. NAGATOMO et al., "Ga <sub>1-x</sub> In <sub>x</sub> N Blue Light-Emitting Diodes", Proc. Electrochem. Soc., 1993, Vol. 93-10, pp. 136-141.
G. BLASSE et al., "Investigation of Some Ce <sup>3+</sup> -Activated Phosphors", Journal of Chemical Physics, Vol. 47, No. 12, 15 December 1967.
W.W. HOLLOWAY, Jr. et al., "On The Fluorescence of Cerium - Activated Garnet Crystals", Physics Letters, Vol. 25A, No. 8, 23 October 1967, pp. 614-615.
E.F. GIBBONS et al., "Some Factors Influencing the Luminous Decay Characteristics of Y <sub>3</sub> Al <sub>5</sub> O <sub>12</sub> :Ce <sup>3+</sup> ", J. Electrochem. Soc., Vol. 120, No. 6.
W.J. MINISCALCO et al., "Measurements of Excited-State Absorption in Ce <sup>3+</sup> :YAG <sup>a)</sup> ", J. Appl. Phys. Vol. 49, No. 12, December 1978, pp. 6109-6111.
D.J. ROBBINS et al., "Lattice Defects and Energy Transfer Phenomena in Y <sub>3</sub> Al <sub>5</sub> O <sub>12</sub> :Ce <sup>3+</sup> ", pp. 1004-1013.

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b> <small>(Use several sheets if necessary)</small>		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	01-189695	A	1989-07-28	JAPAN			ABS	
JP	07-120754	A	1995-05-12	JAPAN			X	
JP	06-177423	A	1994-06-24	JAPAN			X	
JP	7-99345	A	1995-04-11	JAPAN			X	
JP	09-027642	A	1997-01-28	JAPAN			X	
JP	05-63068	U	1993-08-20	JAPAN			X	
EP	0 209 942	A1	1987-01-28	EPO				
EP	0 541 373	A2	1992-11-05	EPO				
EP	0 599 224	A1	1994-06-01	EPO				

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)

M.F. YAN et al., "Preparation of $Y_3Al_5O_{12}$ -Based Phosphor Powders, J. Electrochem. Soc., Vol. 134, No. 2.
"Nichia Chemical starts the sample shipment of white light emitting diode", News Report, translation of page 15 of Nikkei Electronics 1996.9.23 (No. 671).
"Proceedings of the Institute of Phosphor Society", Translation of pages 1, 5 to 14 of the 264 <sup>th</sup> Proceedings of the Institute of Phosphor Society.
Shigeo SHIONOYA et al. (editors), "Phosphor Handbook", pp. 505-508, CRC Press.

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Form PTO-1449		ATTY DOCKET NO. 0020-5146P	APPLICATION NO. Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b> <small>(Use several sheets if necessary)</small>		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US 4,727,283		1988-02-23	van Kemenade et al			
	US 4,298,820		1981-11-03	Bongers et al.			
	US 3,699,478		1972-10-17	Pinnow et al.			
	US 5,798,537		1998-08-25	Nitta			
	US 5,202,777		1993-04-13	Sluzky et al.			
	US 3,819,974		1974-06-25	Stevenson et al.			
	US 5,847,507		1998-12-08	Butterworth et al.			
	US 3,691,482		1972-09-12	Pinnow et al.			
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	01179471	A	1989-07-17	JAPAN			ABS	
JP	5043913	C1	1975-04-21	JAPAN				
JP	554898	A	1980-01-14	JAPAN				
JP	09027642	A	1997-01-28	JAPAN			ABS	
JP	08007614	A	1996-01-12	JAPAN			ABS	
JP	07176794	A	1995-07-14	JAPAN			ABS	
JP	07099345	A	1995-04-11	JAPAN			ABS	
JP	05152609	A	1993-06-18	JAPAN			ABS	
JP	6220237	A	1987-01-28	JAPAN				

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)

Glasse et al., Applied Physics Letters, Vol. 11, No. 2, pp. 53-54 (1967)
Hoffman, Journal of Ies, pp. 89-91 (1977)
Nakamura, SPIE, Vol. 3002, pp. 26-35 (1997)
"SIMENS SMT-TOPLED fur die Oberflachenmontage" Frank Mollmer et al. Simens Components, 29 (1991) Hfet 4.

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b>  (Use several sheets if necessary)		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	KIND	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US 4,550,256		1985-10-29	Berkstesser et al.			
	US 4,716,337		1987-12-29	Huiskes et al.			
	US 5,471,113		1995-11-28	De Backer et al.			
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
WO	9750132	A1	1997-12-31	PCT				
WO	9812757	A1	1998-03-26	PCT				
JP	5079379		1973-11-24	JAPAN			ABS	
JP	742152		1995-07-21	JAPAN			ABS	
JP	4717684		1972-09-09	JAPAN			X	
JP	491221		1974-01-12	JAPAN			X	
JP	49112577		1974-10-26	JAPAN			ABS	
JP	62189770		1986-02-15	JAPAN			ABS	
JP	291980		1988-09-29	JAPAN			ABS	

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)

"GaNpn Contact Blue/Ultraviolet light Emitting Diode", H. Amano et al., Applied Physics, Vol. 20, No. 2, pp. 163-166 (1991)
"Phosphors Based on Rare-Earths, A New Era in Fluorescent Lighting", B.M.J. Smets, Materials Chemistry and Physics, 16 pp. 283-299 (1987)
"A New Phosphor for Flying-Spot Cathode-Ray Tubes for Color Television: Yellow Emitting..", G. Blasse et al., App. Phys. Lett. Vol. 11, No. 2, pp. 53-55 (1967)
Tadao MIURA, ELECTRONICS ENGINEERING, "High-intensity White Backlighting for LCD of Car Audios", July 1996, Vol. 38, No. 7, pp. 55-58

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53 (b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b>  (Use several sheets if necessary)		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	5152609	A	1993-06-18	JAPAN			ABS	
JP	5183189	A	1993-07-23	JAPAN			ABS	
JP	863119		1996-03-08	JAPAN			ABS	
JP	10036835	A	1998-02-10	JAPAN			ABS	
JP	49106283		1972-12-27	JAPAN			ABS	
JP	5245181		1977-10-14	JAPAN			ABS	
GB	1589964		1981-05-20	GREAT BRITAIN				
JP	5441660		1979-12-05	JAPAN			X	
JP	5472484		1978-11-07	JAPAN			ABS	

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)

J.M. Robertson, et al., "Colourshift of the Ce <sup>3+</sup> Emission in Monocrystalline Epitaxially Grown Garnet Layers", 1981 Philips J. Res. 36, pp. 15-30
W.W. Holloway, Jr. et al., "Optical Properties of Cerium-Activated Garnet Crystals", 1969 Journal of the Optical Society of America, Vol. 59, No. 1, pp. 60-63
WUSTLICH MIKRO-/OPTO-ELEKTRONIK GMBH (1994/1995)

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b>  (Use several sheets if necessary)		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	5950455		1984-04-01	JAPAN			ABS	
JP	324692		1991-03-14	JAPAN			ABS	
JP	463162		1992-05-29	JAPAN			ABS	
JP	463163		1992-05-29	JAPAN			X	
JP	563068		1993-08-20	JAPAN			ABS	
JP	8170077		1996-07-02	JAPAN			ABS	
JP	5331584		1978-03-24	JAPAN				
JP	60144381		1985-07-30	JAPAN			ABS	
JP	62167387		1987-07-23	JAPAN			ABS	

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)


EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO-1449		ATTY DOCKET NO. 0020-5146	APPLICATION NO. New-Rule 53(b) Div. of 09/458,024
<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b> <small>(Use several sheets if necessary)</small>		APPLICANT Yoshinori SHIMIZU et al.	
		FILING DATE July 1, 2003	GROUP

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	Kind	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						
	US						

**FOREIGN PATENT DOCUMENTS**

Office	DOCUMENT NUMBER	Kind	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION	
							YES	NO
JP	60144381		1985-07-30	JAPAN			ABS	
JP	62167387		1987-07-23	JAPAN			ABS	
JP	6208845		1994-07-26	JAPAN			ABS	
JP	06177423		1994-06-24	JAPAN			ABS	
JP	06260680		1994-09-16	JAPAN			ABS	
JP	06268257		1994-09-22	JAPAN			ABS	

**OTHER DOCUMENTS** (Include Name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.)


EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with M.P.E.P. 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.